Apprenticeship and Industry Training

Auto Body Technician

Apprenticeship Course Outline

1010 (2010)

Government of Alberta

Apprenticeship and Industry Training

ALBERTA ADVANCED EDUCATION AND TECHNOLOGY CATALOGUING IN PUBLICATION DATA

Alberta. Alberta Advanced Education and Technology. Apprenticeship and Industry Training.
Auto body technician : apprenticeship course outline.

ISBN 978-0-7785-9090-3

1. Automobiles--Maintenance and repair--Study and teaching--Alberta. 2. Apprentices--Alberta. 3. Occupational training--Alberta.
4. Apprenticeship programs--Alberta. I. Title. II. Series: Apprenticeship and industry training.

HD4885.C2.A97 A333 2010 629.26

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Auto Body Technician
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Apprenticeship

Apprenticeship is post-secondary education with a difference. Apprenticeship begins with finding an employer. Employers hire apprentices, pay their wages and provide on-the-job training and work experience. Approximately 80 per cent of an apprentice's time is spent on the job under the supervision of a certified journeyperson or qualified tradesperson. The other 20 per cent involves technical training provided at, or through, a post-secondary institution – usually a college or technical institute.

To become certified journeypersons, apprentices must learn theory and skills, and they must pass examinations. Requirements for certification—including the content and delivery of technical training—are developed and updated by the Alberta Apprenticeship and Industry Training Board on the recommendation of Auto Body Technician Provincial Apprenticeship Committee.

The graduate of the Auto Body Prepper apprenticeship training is a journeyperson who will be able to:

- through competent application of his/her skills and knowledge, be proficient in all phases of auto body prepping
- use hand tools and powered equipment in a proper and safe manner
- relate to the work of other tradesperson in the automotive industry
- perform assigned tasks in accordance with quality and production standards required by the industry
- apply primers, primer surfacers and corrosion proofing materials

The graduate of the Auto Body Refinisher apprenticeship training is a journeyperson who will be able to:

- through competent application of his/her skills and knowledge, be proficient in all phases of auto body refinishing
- use hand tools and powered equipment in a proper and safe manner
- relate to the work of other tradesperson in the automotive industry
- apply primers, primer surfacers and corrosion proofing materials
- paint motor vehicles
- perform assigned tasks in accordance with quality and production standards required by industry

The graduate of the Auto Body Repairer apprenticeship training is a journeyperson who will be able to:

- through competent application of his/her skills and knowledge, be proficient in all phases of auto body repair
- use hand tools and powered equipment in a proper and safe manner
- relate to the work of other tradesperson in the automotive industry
- straighten and align frames and unitized structures
- apply primers, primer surfacers and corrosion proofing materials
- repair, replace and align chassis components
- repair and replace drive line support systems
- repair and replace structural and non-structural motor vehicle sections
- perform assigned tasks in accordance with quality and production standards required by industry

The graduate of the Auto Body Technician apprenticeship training is a journeyperson who will be able to:

- through competent application of his/her skills and knowledge, be proficient in all phases of auto body refinishing and repair
- use hand tools and powered equipment in a proper and safe manner
- relate to the work of other tradesperson in the automotive industry
- apply primers, primer surfacers and corrosion proofing materials
- paint motor vehicles
- straighten and align frames and unitized structures
- repair, replace and align chassis components
- repair and replace drive line support systems
- repair and replace structural and non-structural motor vehicle sections
- perform assigned tasks in accordance with quality and production standards required by industry.

Apprenticeship and Industry Training System

Industry-Driven

Alberta's apprenticeship and industry training system is an industry-driven system that ensures a highly skilled, internationally competitive workforce in more than 50 designated trades and occupations. This workforce supports the economic progress of Alberta and its competitive role in the global market. Industry (employers and employees) establishes training and certification standards and provides direction to the system through an industry committee network and the Alberta Apprenticeship and Industry Training Board. The Alberta government provides the legislative framework and administrative support for the apprenticeship and industry training system.

Alberta Apprenticeship and Industry Training Board

The Alberta Apprenticeship and Industry Training Board provides a leadership role in developing Alberta's highly skilled and trained workforce. The board's primary responsibility is to establish the standards and requirements for training and certification in programs under the Apprenticeship and Industry Training Act. The board also provides advice to the Minister of Advanced Education and Technology on the needs of Alberta's labour market for skilled and trained workers, and the designation of trades and occupations.

The thirteen-member board consists of a chair, eight members representing trades and four members representing other industries. There are equal numbers of employer and employee representatives.

Industry Committee Network

Alberta's apprenticeship and industry training system relies on a network of industry committees, including local and provincial apprenticeship committees in the designated trades, and occupational committees in the designated occupations. The network also includes other committees such as provisional committees that are established before the designation of a new trade or occupation comes into effect. All trade committees are composed of equal numbers of employer and employee representatives. The industry committee network is the foundation of Alberta's apprenticeship and industry training system.

Local Apprenticeship Committees (LAC)

Wherever there is activity in a trade, the board can set up a local apprenticeship committee. The board appoints equal numbers of employee and employer representatives for terms of up to three years. The committee appoints a member as presiding officer. Local apprenticeship committees:

- monitor apprenticeship programs and the progress of apprentices in their trade, at the local level
- make recommendations to their trade's provincial apprenticeship committee (PAC) about apprenticeship and certification in their trade
- promote apprenticeship programs and training and the pursuit of careers in their trade
- make recommendations to the board about the appointment of members to their trade's PAC
- help settle certain kinds of disagreements between apprentices and their employers
- carry out functions assigned by their trade's PAC or the board

Provincial Apprenticeship Committees (PAC)

The board establishes a provincial apprenticeship committee for each trade. It appoints an equal number of employer and employee representatives, and, on the PAC's recommendation, a presiding officer - each for a maximum of two terms of up to three years. Most PACs have nine members but can have as many as twenty-one. Provincial apprenticeship committees:

- Make recommendations to the board about:
  - standards and requirements for training and certification in their trade
  - courses and examinations in their trade
  - apprenticeship and certification
  - designation of trades and occupations
  - regulations and orders under the Apprenticeship and Industry Training Act
- monitor the activities of local apprenticeship committees in their trade
- determine whether training of various kinds is equivalent to training provided in an apprenticeship program in their trade
- promote apprenticeship programs and training and the pursuit of careers in their trade
- consult with other committees under the Apprenticeship and Industry Training Act about apprenticeship programs, training and certification and facilitate cooperation between different trades and occupations
- consult with organizations, associations and people who have an interest in their trade and with employers and employees in their trade
- may participate in resolving certain disagreements between employers and employees
- carry out functions assigned by the board

Auto Body Technician PAC Members at the Time of Publication

Mr. G. Shaw	Lethbridge	Presiding Officer
Mr. P. Brunschwiler	De Winton	Employer
Mr. B. Hemstreet	Red Deer	Employer
Mr. A. Smith	Innisfail	Employer
Mr. J. Wold	Wembley	Employer
Mr. T. Harder	Edmonton	Employee
Mr. J. Middleton	Sherwood Park	Employee
Mr. M. Yeo	Calgary	Employee

Alberta Government

Alberta Advanced Education and Technology works with industry, employer and employee organizations and technical training providers to:

- facilitate industry's development and maintenance of training and certification standards
- provide registration and counselling services to apprentices and employers
- coordinate technical training in collaboration with training providers
- certify apprentices and others who meet industry standards

Technical Institutes and Colleges

The technical institutes and colleges are key participants in Alberta's apprenticeship and industry training system. They work with the board, industry committees and Alberta Advanced Education and Technology to enhance access and responsiveness to industry needs through the delivery of the technical training component of apprenticeship programs. They develop lesson plans from the course outlines established by industry and provide technical training to apprentices.

Apprenticeship Safety

Safe working procedures and conditions, incident/injury prevention, and the preservation of health are of primary importance in apprenticeship programs in Alberta. These responsibilities are shared and require the joint efforts of government, employers, employees, apprentices and the public. Therefore, it is imperative that all parties are aware of circumstances that may lead to injury or harm.

Safe learning experiences and healthy environments can be created by controlling the variables and behaviours that may contribute to or cause an incident or injury. By practicing a safe and healthy attitude, everyone can enjoy the benefit of an incident and injury free environment.

Alberta Apprenticeship and Industry Training Board Safety Policy

The Alberta Apprenticeship and Industry Training Board fully supports safe learning and working environments and encourages the teaching of proper safety procedures both within trade specific training and in the workplace.

Trade specific safety training is an integral component of technical training, while ongoing or general non-trade specific safety training remains the responsibility of the employer and the employee as required under workplace health and safety legislation.

Workplace Responsibilities

The employer is responsible for:

- training employees and apprentices in the safe use and operation of equipment
- providing and maintaining safety equipment, protective devices and clothing
- enforcing safe working procedures
- providing safeguards for machinery, equipment and tools
- observing all accident prevention regulations

The employee and apprentice are responsible for:

- working in accordance with the safety regulations pertaining to the job environment
- working in such a way as not to endanger themselves, fellow employees or apprentices

Workplace Health and Safety

A tradesperson is often exposed to more hazards than any other person in the work force and therefore should be familiar with and apply the Occupational Health and Safety Act, Regulations and Code when dealing with personal safety and the special safety rules that apply to all daily tasks.

Workplace Health and Safety (Alberta Employment, Immigration and Industry) conducts periodic inspections of workplaces to ensure that safety regulations for industry are being observed.

Additional information is available at www.worksafely.org

Technical Training

Apprenticeship technical training is delivered by the technical institutes and many colleges in the public post-secondary system throughout Alberta. The colleges and institutes are committed to delivering the technical training component of Alberta apprenticeship programs in a safe, efficient and effective manner. All training providers place great emphasis on safe technical practices that complement safe workplace practices and help to develop a skilled, safe workforce.

The following institutions deliver Auto Body Technician apprenticeship technical training:

Northern Alberta Institute of Technology
Southern Alberta Institute of Technology

Procedures for Recommending Revisions to the Course Outline

Advanced Education and Technology has prepared this course outline in partnership with the Auto Body Technician Provincial Apprenticeship Committee.

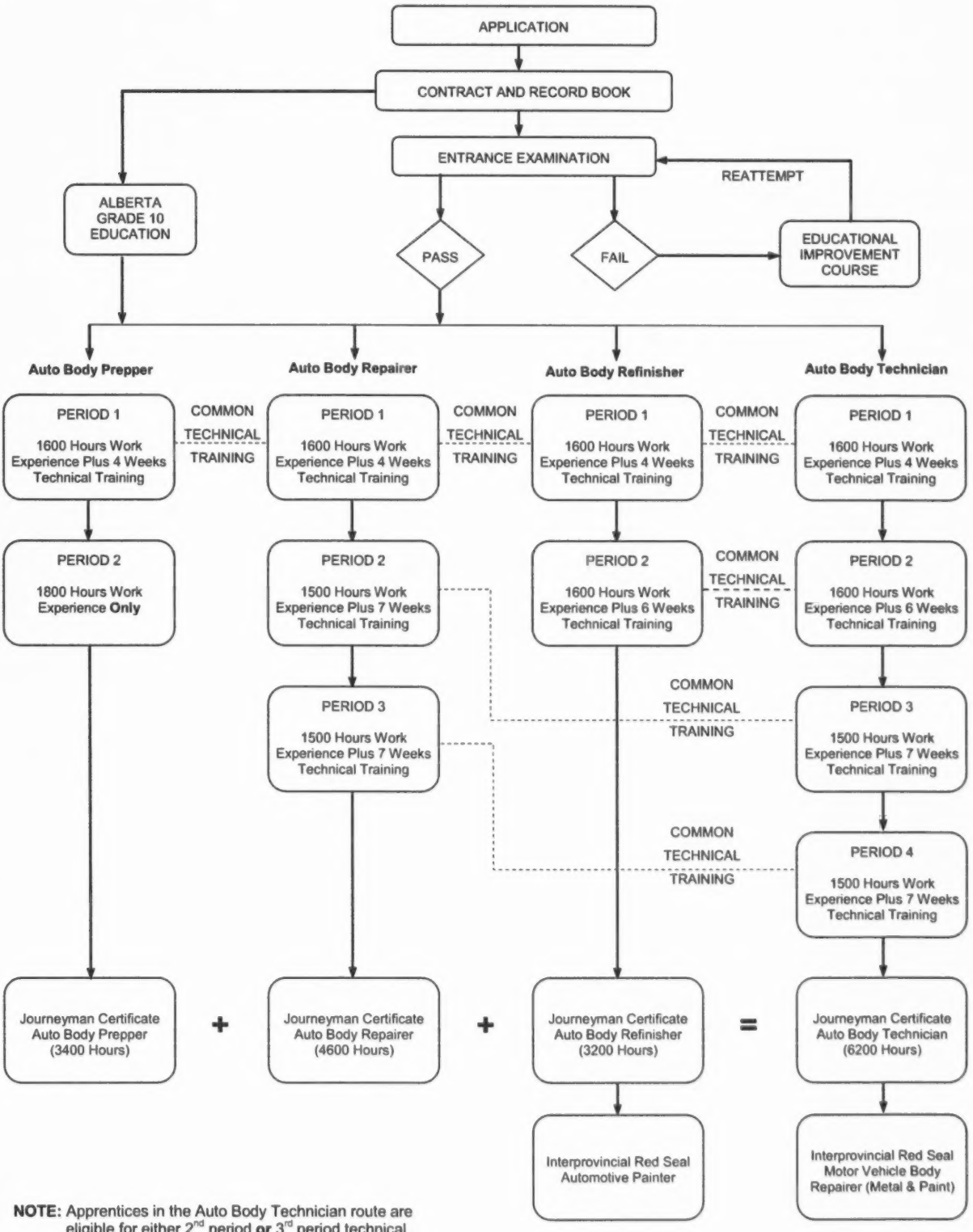
This course outline was approved on January 29, 2010 by the Alberta Apprenticeship and Industry Training Board on a recommendation from the Provincial Apprenticeship Committee. The valuable input provided by representatives of industry and the institutions that provide the technical training is acknowledged.

Any concerned individual or group in the province of Alberta may make recommendations for change by writing to:

Auto Body Technician Provincial Apprenticeship Committee
c/o Industry Programs and Standards
Apprenticeship and Industry Training
Advanced Education and Technology
10th floor, Commerce Place
10155 102 Street NW
Edmonton AB T5J 4L5

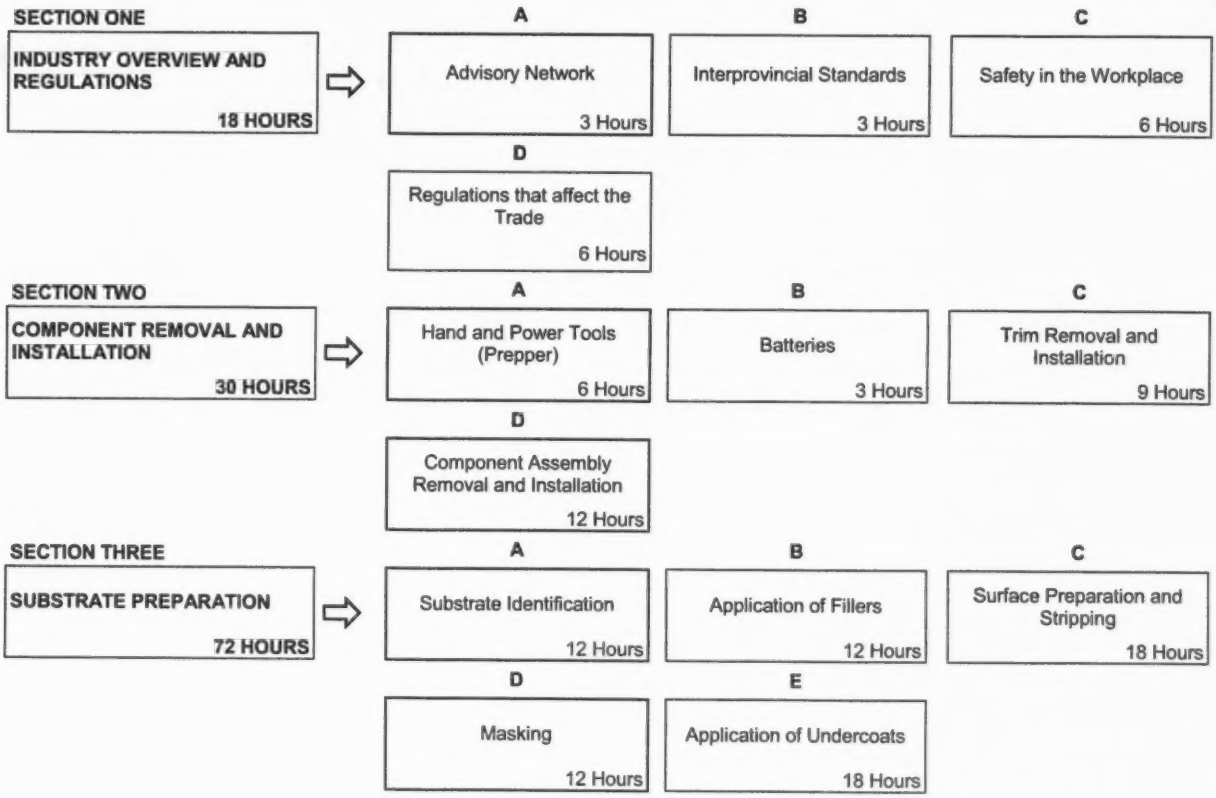
It is requested that recommendations for change refer to specific areas and state references used. Recommendations for change will be placed on the agenda for regular meetings of the Auto Body Technician Provincial Apprenticeship Committee.

Apprenticeship Route toward Certification


APPLICATION
CONTRACT AND RECORD BOOK
ENTRANCE EXAMINATION
REATTEMPT
ALBERTA GRADE 10 EDUCATION
PASS
FAIL
EDUCATIONAL IMPROVEMENT COURSE
Auto Body Prepper
Auto Body Repairer
Auto Body Refinisher
Auto Body Technician
PERIOD 1
1600 Hours Work Experience Plus 4 Weeks Technical Training
COMMON TECHNICAL TRAINING
PERIOD 2
1800 Hours Work Experience Only
1500 Hours Work Experience Plus 7 Weeks Technical Training
1600 Hours Work Experience Plus 6 Weeks Technical Training
PERIOD 3
PERIOD 4
Journeyman Certificate Auto Body Prepper (3400 Hours)
+
Journeyman Certificate Auto Body Repairer (4600 Hours)
Journeyman Certificate Auto Body Refinisher (3200 Hours)
=
Journeyman Certificate Auto Body Technician (6200 Hours)
Interprovincial Red Seal Automotive Painter
Interprovincial Red Seal Motor Vehicle Body Repairer (Metal & Paint)

NOTE: Apprentices in the Auto Body Technician route are eligible for either 2nd period **or** 3rd period technical training after completing 1st period technical training, but must complete both 2nd and 3rd periods before progressing to 4th period technical training.

Auto Body Technician Training Profile
First Period (All Branches)
(4 Weeks 30 Hours per Week – Total of 120 Hours)



Second Period (Technician & Refinisher)
(6 Weeks 30 Hours per Week – Total of 180 Hours)

SECTION ONE

PAINT DAMAGE ANALYSIS
18 HOURS

- **A** — Paint Damage Analysis — 15 Hours
- **B** — Estimating — 3 Hours

SECTION TWO

COLOUR MATCHING OF PAINT
36 HOURS

- **A** — Adjusting Paint Colour — 27 Hours
- **B** — Topcoat Paint Preparation — 9 Hours

SECTION THREE

FINISH AND TOPCOAT APPLICATION
102 HOURS

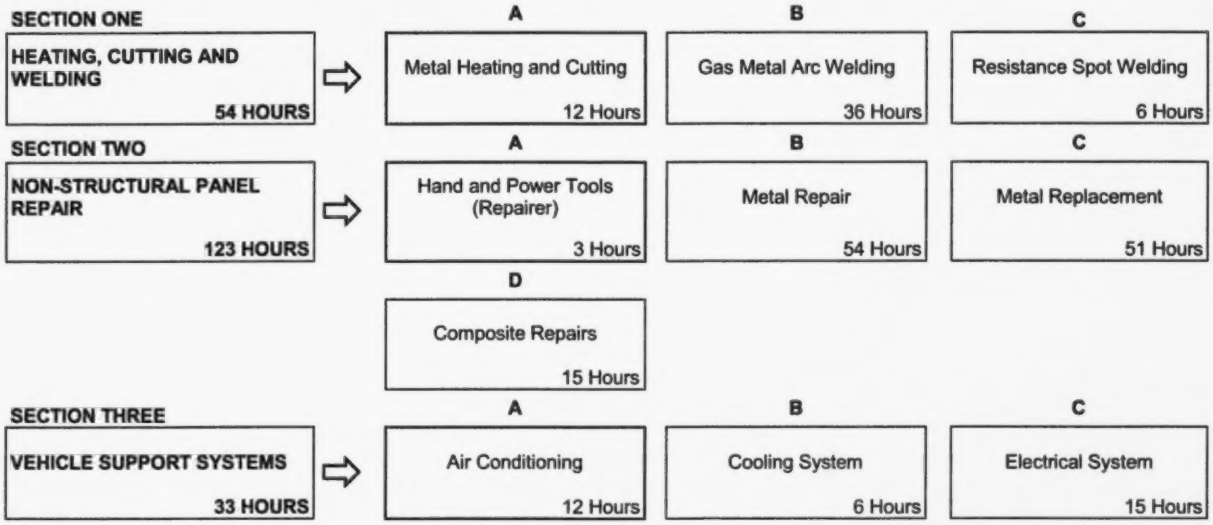
- **A** — Hand and Power Tools (Refinisher) — 3 Hours
- **B** — Topcoat Application Techniques — 30 Hours
- **C** — Spot Repair Application Techniques — 39 Hours
- **D** — OEM Special Effect Topcoats — 15 Hours
- **E** — Composite Refinishing Techniques — 15 Hours

SECTION FOUR

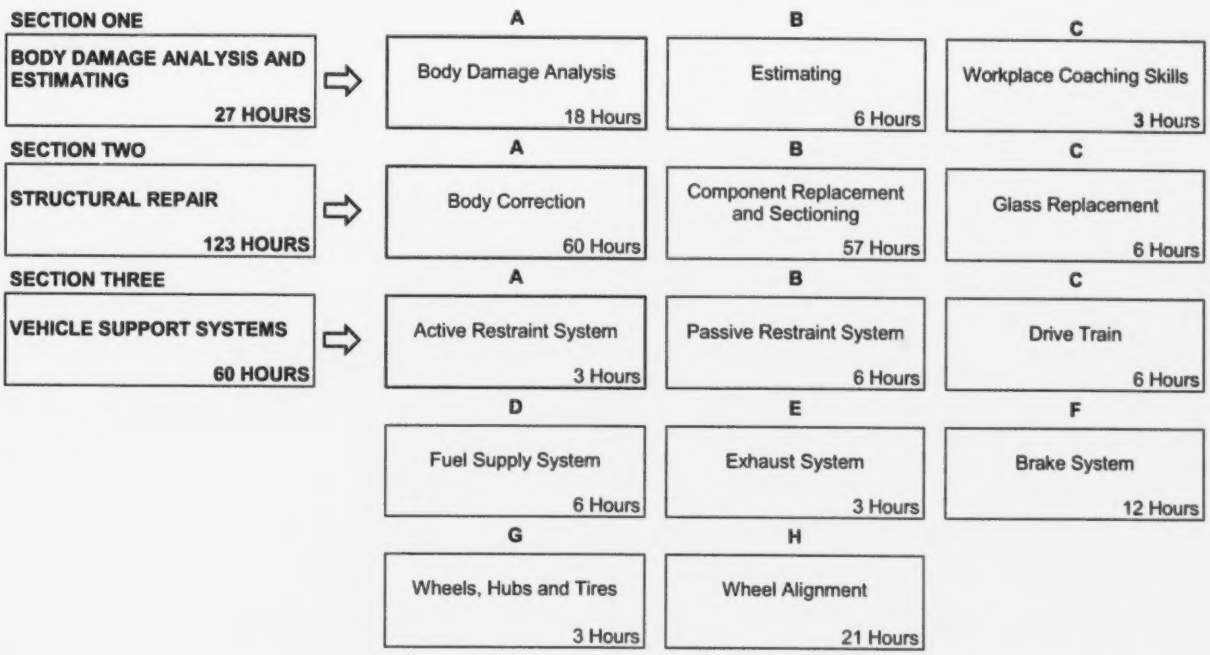
PAINT AND RELATED MATERIALS MANAGEMENT
24 HOURS

- **A** — Paint Application Management — 21 Hours
- **B** — Refinish Materials Inventory — 3 Hours

Third Period (Technician & Repairer)
(7 Weeks 30 Hours per Week – Total of 210 Hours)



Fourth Period (Technician & Repairer)
(7 Weeks 30 Hours per Week – Total of 210 Hours)



NOTE: The hours stated are for guidance and should be adhered to as closely as possible. However, adjustments must be made for rate of apprentice learning, statutory holidays, registration and examinations for the training establishment and Apprenticeship and Industry Training.

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FIRST PERIOD TECHNICAL TRAINING
AUTO BODY TECHNICIAN TRADE
(ALL BRANCHES)
COURSE OUTLINE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE:.....INDUSTRY OVERVIEW AND REGULATIONS..... 18 HOURS

A. Advisory Network ..... 3 Hours

Outcome: ***Explain the Auto Body Technician apprenticeship program.***

1. Describe the structure and purpose of the provincial Alberta Apprenticeship and Industry Training (AIT) Board, Provincial Apprenticeship Committees (PAC) and Local Apprenticeship Committees (LAC).
2. Describe the purpose and process related to the Contract of Apprenticeship and Record Book.
3. Identify the Training Profile for the Auto Body Technician Trade.
4. Comply with Apprenticeship Act and Regulations.

B. Interprovincial Standards ..... 3 Hours

Outcome: ***Participate in the Red Seal / Interprovincial standards program.***

1. Describe the National Occupational Analysis (NOA).
2. Identify the correlation between the Red Seal Automotive Painter test and the Motor Vehicle Body Repair test in relation to Auto Body Technician apprenticeship training.
3. Describe the relationship between the NOA and Red Seal / Interprovincial examinations.
4. Discuss the roles of federal and provincial government in the development of Red Seal standards.
5. Discuss the role of industry in the development of Red Seal standards.
6. Explain the intent of the Red Seal exam as it relates to interprovincial mobility.
7. Describe sources of information on Red Seal standards and practice examinations.

C. Safety in the Workplace ..... 6 Hours

Outcome: ***Demonstrate safety as a prepper in the Auto Body shop.***

1. Describe the types of personal hazards associated with the work assigned to a prepper (electrical tools, rotating machinery, comp. air, jacking and hoisting, exhaust gases, etc.).
2. Use safety equipment and procedures when dealing with hazards associated with prepper work.
3. Control hazardous products commonly used by preppers.
4. Describe environmental hazards associated with the trade.
5. Use supplied air breathing systems.

D. Regulations That Affect the Trade ..... 6 Hours

Outcome: ***Follow work practices that adhere to the regulations of the Auto Body workplace.***

1. Apply Workplace Health and Safety regulations.
2. Apply Occupational Health and Safety (OHS) regulations.
3. Apply Workplace Hazardous Materials Information System (WHMIS) regulations.
4. Apply fire regulations.
5. Apply Workers' Compensation Board (WCB) regulations.
6. Apply environmental regulations including volatile organic compounds (VOC) legislation.

SECTION TWO: ..... COMPONENT REMOVAL AND INSTALLATION ..... 30 HOURS

A. Hand and Power Tools (Prepper) ..... 6 Hours

Outcome: ***Use hand and power tools common to a prepper.***

1. Identify common hand tools.
2. Identify common power tools.
3. Use hand and power tools.

B. Batteries ..... 3 Hours

Outcome: ***Perform battery charging and boosting.***

1. Describe battery servicing procedures.
2. Perform battery charging and boosting operations.
3. Describe the differences between conventional lead acid batteries and hybrid car batteries and their support systems, in terms of purpose, construction, operation and safety procedures.

C. Trim Removal and Installation ..... 9 Hours

Outcome: ***Replace interior and exterior trim.***

1. Explain estimates and repair orders.
2. Identify the purpose of trim.
3. Assess trim for damage to determine a repair procedure.
4. Install common interior trim components as required for prepping.
5. Install exterior trim components as required for prepping.

D. Component Assembly – Removal and Installation ..... 12 Hours

Outcome: ***Replace components following manufacturer's recommendations.***

1. Identify passive restraint system components.
2. Identify safety concerns related to passive restraint systems.
3. Identify the types and location of glass in automotive use (structural and non-structural).
4. Perform removal and replacement procedures for moveable non-structural glass.
5. Assess operation of movable components (doors, windows, seats etc).
6. Describe bumper alignment.

7. Perform removal and replacement procedures for a bumper assembly.
8. Describe removal and installation of road wheels.
9. Perform headlight alignment.

SECTION THREE: ..... SUBSTRATE PREPARATION ..... 72 HOURS

A. Substrate Identification ..... 12 Hours

Outcome: Identify types of paint finishes.

1. Clean the substrate surface and vehicle.
2. Identify substrate.
3. Identify existing substrate conditions.
4. Follow a self-planned preparation procedure for refinishing operation.

B. Application of Fillers ..... 12 Hours

Outcome: Use fillers to repair minor imperfections no more than 1/8" (3 mm) deep.

1. Identify the different types of fillers and their uses on metals.
2. Use the appropriate filler material to repair minor imperfections on sheet metal (no more than 1/8" (3 mm) deep.

C. Surface Preparation and Stripping ..... 18 Hours

Outcome: Reduce mil thickness, smooth and level a substrate.

1. Describe paint removal methods on good and poor substrate surfaces.
2. Perform a sanding process to prepare a metal substrate for undercoat application.
3. Describe a sanding process for preparing a composite substrate for undercoat application.
4. Perform a sanding process for preparing a metal substrate for topcoat application.
5. Describe a sanding process for preparing a composite substrate for topcoat application.

D. Masking ..... 12 Hours

Outcome: Mask for undercoat and topcoat application.

1. Describe methods and materials used for masking a vehicle for undercoat or topcoat application.
2. Mask a repair area or vehicle for undercoat application.
3. Mask a repair area or vehicle for topcoat application.

E. Application of Undercoats .....18 Hours

Outcome: ***Apply undercoats and corrosion protection compounds.***

1. Perform operating and maintenance procedures for refinishing equipment (spray guns).
2. Prepare undercoat materials using to manufacturers procedures and specifications.
3. Apply various undercoats to properly prepared substrates.
4. Describe the application of various corrosion protection compounds.
5. Describe the process of edge painting body components.
6. Identify the types of topcoat finishes used in the automotive industry today.
7. Identify a vehicle paint code.

SECOND PERIOD TECHNICAL TRAINING
AUTO BODY TECHNICIAN TRADE (TECHNICIAN & REFINISHER)
COURSE OUTLINE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE:.....PAINT DAMAGE ANALYSIS..... 18 HOURS

A. Paint Damage Analysis.....15 Hours

Outcome: ***Describe paint application faults and the correct method of repair.***

1. Identify the major paint application faults and causes.
2. Perform a repair procedure to remedy wet and cured finish faults.

B. Estimating.....3 Hours

Outcome: ***Explain a refinish estimate and repair order.***

1. Identify the refinishing work required.
2. Explain a supplement report.

SECTION TWO:..... COLOUR MATCHING OF PAINT..... 36 HOURS

A. Adjusting Paint Colour.....27 Hours

Outcome: ***Adjust a paint colour in order to achieve a blendable match.***

1. Describe paint composition and top coats.
2. Explain colour theory.
3. Recognize a colour mismatch.
4. Adjust colour using gun technique to produce a blendable match.
5. Tint a paint using a recommended procedure to produce a blendable match.
6. Verify colour match using industry-approved methods (e.g. spray out cards, etc.).

B. Topcoat Paint Preparation.....9 Hours

Outcome: ***Identify the type of finish and amount of material needed for a top coat.***

1. Select a formula that corresponds to a paint code.
2. Determine the amount of paint required for a job.
3. Follow manufacturer's instructions and mix paint for a job.
4. Correct an over-pour situation when mixing paint.

SECTION THREE: ..... FINISH AND TOPCOAT APPLICATION..... 102 HOURS

A. Hand and Power Tools.....3 Hours

Outcome: ***Use hand and power tools common to a refinisher.***

1. Identify common hand tools.
2. Identify common power tools.
3. Use hand and power tools.

B. Topcoat Application Technique.....30 Hours

Outcome: ***Perform completes using topcoats and finishes.***

1. Identify the circumstances when different sealers are required.
2. Describe a complete topcoat application.
3. Perform a topcoat application.

C. Spot Repair Application Techniques.....39 Hours

Outcome: ***Perform spot repairs using a variety of topcoats and finishes.***

1. Describe blending products.
2. Describe blending techniques and applications.
3. Describe surface preparation considerations.
4. Describe masking considerations.
5. Perform spot repair.
6. Perform polishing techniques.

D. OEM Special Effect Topcoats.....15 Hours

Outcome: ***Perform completes and spot repairs using OEM special effects finishes.***

1. Describe the types and identification of OEM multi-stage finishes.
2. Describe tri-coat spot and complete refinish procedures.
3. Perform a tri-coat spot repair.

E. Composite Refinishing Techniques .....15 Hours

Outcome: ***Refinish vehicle composites.***

1. Describe the use of adhesion promoters when refinishing composites.
2. Describe the use of flex agents when refinishing composites.
3. Identify the topcoats used for the refinishing of composites.
4. Describe the refinishing of composites.

SECTION FOUR: .....PAINT AND RELATED MATERIALS MANAGEMENT ..... 24 HOURS

A. Paint Application Management .....21 Hours

Outcome: ***Prepare the environment for quality refinishing processes.***

1. Describe the operation and maintenance of a compressed air supply system.
2. Describe the operation of a spray booth and prep station.
3. Perform basic maintenance cleaning of a spray booth or prep station.
4. Identify the requirements of a paint mixing room.
5. Describe the steps required to prepare the refinisher, the vehicle and the spray equipment for applying finishes.

B. Refinish Materials Inventory.....3 Hours

Outcome: ***Manage the process of inventory control and record keeping.***

1. Describe the relationship between record keeping procedures and paint department operations.
2. Describe the management of materials inventory.
3. Describe the management of waste materials.

THIRD PERIOD TECHNICAL TRAINING
AUTO BODY TECHNICIAN TRADE (TECHNICIAN & REPAIRER)
COURSE OUTLINE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE:..... WELDING ..... 54 HOURS

A. Metal Heating, and Cutting ..... 12 Hours

Outcome: ***Perform metal heating and cutting with oxyacetylene equipment.***

1. Describe the characteristics of and handling procedures for oxygen and acetylene.
2. Demonstrate handling procedures for regulators and hoses.
3. Demonstrate the use, care and maintenance of torches and tips.
4. Perform basic cutting and heating operations.
5. Demonstrate the use of personal protective equipment.
6. Describe fusion and non-fusion welding processes.

B. Gas Metal Arc Welding..... 36 Hours

Outcome: ***Produce GMAW welds on steel.***

1. Assemble, adjust and operate GMAW welding equipment.
2. Perform industry-acceptable lap, butt and plug welds on 16 & 20 gauge steel.
3. Demonstrate the ability to weld in all positions.
4. Describe the process for aluminium welding.
5. Recognize, identify and correct weld faults
6. Troubleshoot and maintain GMAW equipment.

C. Resistance Spot Welding (RSW) .....6 Hours

Outcome: ***Perform a resistance spot weld to manufacturer's recommendations.***

1. Describe the process to prepare and perform resistance spot welds to industry standards or manufacturer's recommendations.

SECTION TWO:..... NON-STRUCTURAL PANEL REPAIR..... 123 HOURS

A. Hand and Power Tools..... 3 Hours

Outcome: ***Use hand and power tools common to a repairer.***

1. Identify common hand tools.
2. Identify common power tools.
3. Use hand and power tools.

B. Metal Repair ..... 54 Hours

Outcome: ***Perform metal repair work for a four hour dent (minimum).***

1. Perform a rough-out on a damaged panel.
2. Complete a dinging operation on a roughed-out panel.
3. Perform a metal shrinking operation.
4. Metal finish a panel after dinging operation is complete.
5. Apply and sand body filler on a panel after metal finishing operation.

C. Metal Replacement ..... 51 Hours

Outcome: ***Replace collision damaged panels.***

1. Fit and align bolt on components.
2. Describe the removal and replacement of an outer door panel using welding and adhesive-bonding techniques.
3. Explain how to perform leak tests on a vehicle.

D. Composite Repairs ..... 15 Hours

Outcome: ***Perform repairs to composite components.***

1. Identify composite substrate using location, symbols and tests.
2. Develop a plan for repairing damaged flexible, semi-rigid and rigid components.
3. Perform adhesive-bonded repairs on panels.

SECTION THREE: ..... VEHICLE SUPPORT SYSTEMS ..... 33 HOURS

A. Air Conditioning System ..... 12 Hours

Outcome: ***Remove and replace air conditioning system components.***

1. Identify the major components of an A/C system.
2. Describe the operation of an A/C system.
3. Describe the recovery of refrigerant prior to disassembly of a system.
4. Describe the removal and replacement of major components of an A/C system.

B. Cooling System ..... 6 Hours

Outcome: ***Remove and replace cooling system components.***

1. Identify the major components of a cooling system.
2. Describe the operation of a cooling system.
3. Describe the safe handling and disposal of coolant.
4. Describe the removal and replacement of cooling system component

C. Electrical System ..... 15 Hours

Outcome: ***Remove and replace vehicle body electrical system components.***

1. Explain basic electrical theory.
2. Identify basic electrical circuits and their faults.
3. Explain the purpose, construction, operation and ratings of batteries.
4. Perform testing and servicing of batteries.
5. Diagnose problems attributed to batteries.
6. Correctly use a voltmeter, ammeter, ohmmeter and test light to identify a shorted, open or grounded electrical circuit.
7. Identify those electrical/electronic systems most commonly affected by collision damage.
8. Describe generic troubleshooting steps for collision-damaged electrical systems.
9. Describe the hazards associated with electrostatic discharge (ESD) when working with vehicle electronic systems.
10. Describe removal and replacement procedures of damaged or defective electrical/electronic components.
11. Describe hazards and safety practices related to hybrid vehicles.
12. Perform wire harness and connector repairs to industry/manufacture's standards.

FOURTH PERIOD TECHNICAL TRAINING
AUTO BODY TECHNICIAN TRADE (TECHNICIAN & REPAIRER)
COURSE OUTLINE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE:.....BODY DAMAGE ANALYSIS AND ESTIMATING..... 27 HOURS

A. Body Damage Analysis.....18 Hours

Outcome: ***Create a repair plan based on an analysis of body damage.***

1. Identify types of collision damage.
2. Explain the principles of measurement based on vehicle construction.
3. Demonstrate the use and maintenance of gauging equipment in damage analysis.
4. Analyze collision damage for: severity, direction, location and extent.
5. Create a repair plan.

B. Estimating .....6 Hours

Outcome: ***Describe estimating, repair orders and quality control checks.***

1. Describe the requirements of an estimate.
2. Explain estimates and repair orders.
3. Perform the filling out and filing of a supplement report.
4. Describe the process of releasing a vehicle back to the customer and ensuring roadworthiness.

C. Workplace Coaching .....3 Hours

Outcome: ***Deliver on-the-job apprenticeship training.***

1. Describe the following coaching skills used for training apprentices:
   a) identify the goal of training
   b) relate to previous experiences
   c) demonstrate the sill or procedure
   d) guide and analyze the practice attempts
   e) provide feedback
   f) assess progress.

SECTION TWO:.....STRUCTURAL REPAIR..... 123 HOURS

A. Body Correction.....60 Hours

Outcome: ***Perform straightening and aligning procedures on unibody/frame structures.***

1. Follow a repair plan to correct collision damage.
2. Anchor a vehicle to straightening equipment.
3. Perform straightening and aligning procedures to restore a vehicle to pre-accident condition.

B. Component Replacement and Sectioning ..... 57 Hours

Outcome: ***Replace structural components using industry approved methods.***

1. Describe the process of replacing and/or sectioning a B-pillar.
2. Describe the process of replacing and/or sectioning a rocker panel.
3. Describe the process of replacing a roof panel.
4. Describe the process of replacing and/or sectioning a front or rear unibody frame member.
5. Describe the process of sectioning a body over frame (BOF) frame rail (OEM procedure).
6. Describe the process of replacing and/or sectioning quarter panels.
7. Perform a sectioning operation on a structural component.
8. Describe the use of different types of foam.

C. Glass Replacement ..... 6 Hours

Outcome: ***Perform a body-squaring operation for structural glass replacement.***

1. Identify location of structural glass components in a motor vehicle.
2. Describe the different methods of structural glass replacement.
3. Perform a body-squaring operation using a structural glass component.

SECTION THREE: ..... VEHICLE SUPPORT SYSTEMS ..... 60 HOURS

A. Active Restraint Systems ..... 3 Hours

Outcome: ***Remove and replace active restraint system components.***

1. Explain the purpose of active restraint systems.
2. Identify components of an active restraint system.

B. Passive Restraint Systems ..... 6 Hours

Outcome: ***Service passive restraint systems.***

1. Explain the purpose of passive restraint systems.
2. Describe safety practices related to passive restraint systems.
3. Identify components of a passive restraint system.
4. Recognize passive restraint system faults using on-board diagnostics.
5. Describe component replacement procedures.

C. Drive Train ..... 6 Hours

Outcome: ***Remove and install drive train components.***

1. Identify the major components of a drive train.
2. Describe the process to remove and replace damaged components of a drive train.
3. Describe the process to remove and replace a complete drive train for auto body repairs.

D. Fuel Supply System ..... 6 Hours

Outcome: ***Remove and replace components of the fuel supply system.***

1. Identify fuels used to power vehicles and precautions related to these fuels during repair work.
2. Identify the major fuel supply system components.
3. Describe the operation of a fuel supply system.
4. Describe the recovery of fuel during a disassembly process.
5. Describe the removal and replacement of the major fuel supply system components.

E. Exhaust System ..... 3 Hours

Outcome: ***Remove and replace exhaust system components.***

1. Identify the major exhaust system components.
2. Describe the process to remove and replace exhaust system components.

F. Brake System ..... 12 Hours

Outcome: ***Remove and replace components of a brake system.***

1. Identify major brake system components.
2. Recognize an ABS equipped vehicle, the major ABS components and the precautions required for auto body repair work.
3. Describe the inspection process to identify damaged and worn brake system components.
4. Describe the removal and replacement of major brake system components.
5. Perform a basic brake system operation check.

G. Wheels, Tires and Wheel Bearings ..... 3 Hours

Outcome: ***Perform diagnosis and service on wheels, tires and wheel bearings.***

1. Describe the procedures to inspect and replace wheel bearings.
2. Diagnose problems related to wheels, tires and wheel bearings.

H. Wheel Alignment ..... 21 Hours

Outcome: ***Interpret wheel alignment data to identify damaged components and frame alignment problems.***

1. Identify the major components of the steering and suspension systems and describe their functions.
2. Describe wheel alignment angles and their relationships.
3. Describe the removal and replacement of components of the steering and suspension systems.
4. Describe how to take wheel alignment readings to verify proper structural repairs and identify damaged components.

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